

## VULNERABILITY TO NATURAL DISASTERS: IMPLICATIONS FOR NURSING

Andrea Gonçalves Bandeira\*  
Sandra Mara Marin\*\*  
Regina Rigatto Witt\*\*\*

### ABSTRACT

The growth in the occurrence of natural disasters in contemporary times and their increased intensity and severity bring the challenge, for managers, professionals, and the population, to be prepared for facing them, considering the measures that must be taken regarding vulnerability. International organizations point out the need for greater awareness of the importance to reduce disasters, in order to make communities resilient to natural hazards. This article aims to present a reflection on the implications for nursing, based on the types of vulnerability. The disaster situation mobilizes various actors, representatives of the organized civil society, health services, which play a significant role in prevention, preparation, response, and reconstruction. These situations have reverberated internationally, due to the dissemination of information regarding the vulnerability of victims. To face these problems, we introduce the implications for nursing in these scenarios, since these professionals take part of the human resources in the health care field at any level of care. Their work must be observed both in the preparation and response to a disaster situation, which demands immediate, effective, and good quality attention, in order to minimize risk to victims.

**Keywords:** Natural Disasters. Disaster Vulnerability. Nursing. Health Promotion.

### INTRODUCTION

In recent years, there has been registered an increasing number of natural disasters, both in quantity and intensity, in various locations around the world. These disasters have been happening very frequently, depriving thousands of people of their homes, often destroying whole cities, and we do not know the full severity of facts<sup>(1,2)</sup>.

These situations have reverberated internationally, due to the dissemination of information regarding the vulnerability of victims. In general, the concept of vulnerability may be understood as susceptibility to danger or damage. For a long time, it was directly related to the epidemiological concept of hazard, which designates it as a tool having a probabilistic nature of exposure to pathogenic or protective agents<sup>(1,2)</sup>, and it is defined by the *Report on Disaster Risk Reduction*, by the United Nations Development Program (UNDP), as “the number of deaths in a dangerous event in relation to the total population exposed to such an event”<sup>(3)</sup>.

Thus, international organizations, such as the United Nations (UN), take positions regarding the issue. Among them, that it is possible to prepare society to avoid, minimize, or face these events, by previously recognizing risk conditions and promoting a judicious use of resources from the health sector<sup>(3,4)</sup>.

Thus, identifying vulnerability might allow guiding the action of the various actors, such as representatives of the organized civil society, emergency health services, health care services, through the phases of disaster risk reduction, regarding prevention (set of actions aiming to prevent the disaster from happening or mitigate the intensity of its consequences), preparation (actions to improve communication skills in case of a disaster), response (actions seeking to aid and assist affected people), and reconstruction (it covers the set of actions aimed to reconstruct the affected community)<sup>(2,4)</sup>.

Concepts as broad as vulnerability and risk, when related to the occurrence of natural disasters, become even more complex, since they can only be measured by observing the impact of a dangerous event at the time and

\*Nurse Specialist in Family and Community Health; Master in Nursing; PhD student of the Graduate Program in Nursing at UFRGS; Assistant Professor FAENFI / PUCRS. Group of Studies in Education, Family, Health, and Community-NEESFAC. E-mail: deiabandeira@hotmail.com

\*\* Nurse. PhD Student in Nursing and Master's graduate program in Nursing UFRGS and Lecturer in Nursing at the University of the State of Santa Catarina UDESC. Member of the Group of Studies in Education, Family, Health, and Community-NEESFAC. E-mail: sandrapeju@hotmail.com

\*\*\* Nurse. PhD in Public Health Nursing, Professor of the Graduate Program in Nursing, Federal University of Rio Grande do Sul. Member of the Group of Studies in Education, Family, Health, and Community-NEESFAC. E-mail: regina.witt@ufrgs.br

location in which they take place, as they are specific to each type of phenomenon and each region and/or population group.

Regarding international actions in disasters, the UN has implemented a secretariat in Geneva, aiming to boost the “International Strategy for Disaster Reduction” (ISDR). Its mission is promoting, within the framework of sustainable development, a greater awareness of the importance of disaster reduction, in order to make communities more resilient to natural hazard<sup>(3,4)</sup>.

Such episodes of great magnitude, according to the origin or primary causes/causative agent, may be natural, human (anthropogenic), or mixed (when human actions or omissions contribute to intensify, complicate, and/or aggravate natural disasters)<sup>(5)</sup>.

In Brazil, the events regarded as having a natural origin are predominantly associated with gradual or sudden floods, windstorms, hailstorms, landslides, droughts and dry spells. The analysis of declared “State of Emergency” and “State of Public Calamity”, published within the period from January 1 to June 16, 2010, indicates a record of natural disasters in recent years. Altogether, the Civil Defense recognized, over this six-month period, 1,635 natural disasters in Brazilian towns, a greater amount than the total of 2009, which reached 1,389<sup>(6)</sup>.

An author from the area of Geography reports that vulnerability to natural disasters is the inability of a person, society, or population group to avoid danger related to natural disasters or the fact of being forced to live under such risky conditions. This context derives from a combination of economic, social, environmental, and political processes<sup>(7)</sup>.

In our reality, social inequality and mass migration to urban centers make many people take shelter and build in hazardous locations, such as hillsides or river banks, something which makes them vulnerable to landslides and flooding. These events put human power beyond nature and require preventive actions, which can be undertaken both by managers and by the population as a whole.

The need for foreign aid, with the commitment of many stakeholders, and the victims themselves, is included into the definition of *catastrophe and disasters* by the

World Health Organization (WHO)<sup>(8)</sup>. Thus, it is worth highlighting the effective participation of Civil Defense agencies and health boards, as well as departments of public security, planning, and public practice, besides society itself, which must be prepared for disaster situations.

When coping with disasters, the field of nursing represents a significant quota of human resources provided by health service systems. Nursing is represented at all levels of health systems, constituting a team on the front line of the public health response, and it is among the professional categories that initiate this process<sup>(9,10)</sup>. In the hospital environment, planning and increasing service capacity in a disaster situation predicts nursing team's participation at all stages, from screening of victims to transfer from the surgical center to the intensive care unit (ICU)<sup>(11)</sup>.

Disaster response requires a specific preparation for the nursing team. For that, the skills and abilities needed to work in disaster situations were identified, such as the *primary skills for nurses in preparing for emergency and disaster care* and a set of guidelines were set by the International Council of Nurses on *nursing competencies in disasters*<sup>(12,13)</sup>. These guidelines not only ensure a better coping with disasters, but also encourage the development of skills for nurses in the areas of prevention, preparation, and recovery, and they are indicated as priorities for contemporary nursing<sup>(14)</sup>.

As a result, prospects are established for nursing practice along with the other actors in disaster reduction, by developing strategies and resources for health promotion actions. This article introduces the implications, for nursing, of adopting these guidelines, considering vulnerability to disasters in its multiple dimensions.

This is a reflective essay with theoretical review on the following themes: 1) natural disasters; 2) vulnerability to disasters; 3) nursing in a disaster situation. The preparation of this study did not involve a strict and/or predefined method.

### Dimensions of vulnerability in disasters

Natural disasters do not follow rules. Predicting time, location, and number of victims, in general, is not possible. When faced with these situations, appropriate prior structuring

proves to be crucial for providing good care; regardless of etiology, medical consequences and those related to public health can be impactful, as the sudden increase in demand can bring great vulnerability to the health system as a whole.

By constituting a public health problem, disasters have been discussed regarding the individual, social, and programmatic vulnerability and they involve several stakeholders<sup>(1,2)</sup>.

Individual vulnerability refers to the degree and quality of information that subjects have about health problems, their production and application to practice. Regarding individual vulnerability, the consequences of natural disasters are not equally perceived by all. Poor people, minorities, women, children, and the elderly are often the most affected subjects in natural disasters around the world<sup>(3)</sup>.

Social vulnerability refers to obtaining information, access to the media, availability of instructional and material resources, and power to participate in political and institutional decisions<sup>(15)</sup>. From this perspective, susceptibility is the socioeconomic and demographic component that measures the propensity of a population group to suffer damages in face of a dangerous phenomenon. This propensity is due to the degree of marginalization, social segregation, and economic weakness to which a particular population group is currently exposed<sup>(16)</sup>.

Related to individual and social vulnerabilities, resilience is the behavioral, community, and political component that captures the ability of a population group undergoing a dangerous phenomenon to absorb the shock and adapt to return to an acceptable status<sup>(15,16)</sup>. In this context, resilience is regarded as the ability of the subject or community to reverse a situation that is unfavorable to her/him/it, taking into account the whole context in which they live, including the fact that may be causing the problem.

In the other hand, programmatic vulnerability consists in the assessment of programs to respond to disease control, as well as the degree and quality of commitment of institutions, resources, management, and monitoring of programs at the various levels of care<sup>(15)</sup>. The

latter depends on the involvement of international, national, and local organizations, in addition to the commitment of governments and the organized civil society.

### **Nursing in the dimensions of vulnerability to natural disasters**

Individual, social, and programmatic vulnerabilities, when related to the complex situation of disasters, engender various possibilities of action for health professionals, with implications for nurses at all levels of the health services system.

Considering individual vulnerability, nursing plays a significant role in the education of subjects for prevention and preparation regarding disasters, strengthening resilience and preparing the civil society to face them. An important space for nursing practice has been determined by the National Policy of Urgency and Emergency Care and by the implementation of the Urgency Care Networks. The latter recommends that emergency care must take place at all levels of the health system, organizing assistance from the primary health centers (PHCs) to post-hospital care, recovery and rehabilitation<sup>(17)</sup>. Thus, there are increased possibilities to work within the health care service system, where health promotion strategies to reduce disasters may be adopted.

Nursing, as a profession that relates socially by means of its organizations, must include into its agenda actions aimed at addressing social vulnerability situations, such as those deriving from natural disasters. To interfere with this level of vulnerability, talking to social and community organizations show to be important, starting from primary care or even from social control instances, so that the community understands issues that make it vulnerable to the occurrence of a disaster, thus being able to actively work to prevent this.

Regarding programmatic vulnerability, preparation for disasters requires that health services – hospitals, urgency and emergency services, and primary care services – deploy a plan to address disasters, establishing rules for good functioning in such events, however, observing the particularities of each institution<sup>(15)</sup>.

In Brazil, nursing, and particularly the nurse, executes a range of activities, often not

specifically related to care, but to service management. Thus, this discussion is important because it reviews work processes, seeking to concentrate efforts to dedicate more time to the practice of specific professional activities, especially directed to patient care<sup>(18,19)</sup>. So, the need for establishing the function and role played by each team member stands out, so that the operating guidelines minimize the chaos and confusion that are often established during this kind of event.

In a disaster, the role played by nursing in critical care is crucial. Some authors emphasize ~~its relation to~~ the impact of the disaster on the structures of the institution, the environment, and the number of professionals available to provide victims with assistance, when it is often needed to move them from other hospital sectors to the emergency units<sup>(20)</sup>.

In this context, programmatic vulnerability is addressed again, since in disaster situations and incidents with multiple victims we are quite dependent on the availability of a multidisciplinary team, intensive care beds, and an appropriate facility to provide initial care. Other critical points are a department able to keep proper provision of hospital supplies, sterilization, a radiology sector able to perform all examinations, among other. We also know that, in a disaster situation (excluding pandemic events), most of the victims arrive at the hospital within the first hour after the onset of the event, and that around 40% require some surgical procedure<sup>(8)</sup>.

In these situations, the town/state/country must provide an effective system of urgency and emergency care, relying not only on secondary and tertiary services, but also on primary care. The latter may be useful in assessment, in initial care, in risk classification, in providing care for patients who are not at risk of death, and also to work along with sanitary and epidemiological surveillance services to notify diseases that derive from the disaster (such as leptospirosis, in cases of flooding). They also can ~~in addition to~~ provide the population with immunization and prepare PHCs and the centers for psychosocial care (CAPS) as facilities to monitor these victims.

## FINAL REMARKS

The panorama introduced here allowed us to visualize the work possibilities of health professionals in natural disasters, both in the provision of health care and in health promotion and disease prevention. Given the vulnerability observed in natural disasters, we highlight nursing because it has a large quota of personnel in health services, with representativeness at the various levels of the health system, besides having pre-established skills to work in cases of emergency.

Nurse's work in unusual situations, such as those deriving from natural disasters, when based on constant organization, perception, and responsibility, and focus on professional and interdisciplinary skills, must provide a comprehensive care.

The identification of conditions, characteristics, and circumstances for protecting and strengthening subjects and groups against illness constitutes an advantage of the concept of vulnerability. This identification, along with the assessment of the type of vulnerability, may lead to the recognition of characteristics or conditions to maximize the resources available to cope with the situation.

We recommend the adoption of documents for education aimed at emergency and response to all risks. They may be used at all phases or in global aspects of disaster reduction actions, as proposed by Civil Defense agencies and WHO, i.e. those of preparation, response, and recovery of affected communities.

At these steps, the nurse plays a key role as educator for disease prevention and health promotion, in order to raise population awareness of imminent risks and minimize disaster situations, as well as prepare the community to face these events. The primary care nurse, who is closer to the community, is more likely to take actions such as those recommended by the emergency policy, both at prevention and preparation phases.

In the latter, the nurse plays an important role to prepare contingency plans, continuing staff education, provision of human and material resources in case of events of great magnitude, articulation of the health care system and mobilization of a multiprofessional team to face the disaster situation.

As an outcome of this reflection, we conclude that further studies on this theme are needed, in order to explore nurse's work possibilities along with the nursing team, but also with the interdisciplinary team, in coping with disaster

situations, from its prevention until the reconstruction of affected areas, based on the assessment of vulnerability of populations that are under her/his responsibility.

---

## **VULNERABILIDADE A DESASTRES NATURAIS: IMPLICAÇÕES PARA A ENFERMAGEM**

### **RESUMO**

A crescente ocorrência de desastres naturais na contemporaneidade e o aumento de sua intensidade e gravidade colocam o desafio, para gestores, profissionais e população, do preparo para enfrentá-los, considerando as medidas que devem ser tomadas em relação a vulnerabilidade. Organizações internacionais indicam a necessidade de maior consciência da importância da redução de desastres, a fim de tornar as comunidades resilientes ao risco natural. Este artigo tem por objetivo apresentar uma reflexão sobre as implicações para a enfermagem, baseada nos tipos de vulnerabilidade. A situação de desastre mobiliza vários atores, representantes da sociedade civil organizada, serviços de saúde, os quais desempenham papel relevante na prevenção, preparo, resposta e reconstrução. Essas situações têm repercutido internacionalmente, devido à disseminação de informações a respeito da vulnerabilidade das vítimas. Para o enfrentamento dessas problemáticas, apresentamos as implicações para a enfermagem nesses cenários, visto que esses profissionais compõem os recursos humanos da área da saúde em qualquer nível de atenção. Sua atuação deve dar-se tanto no preparo como na resposta à situação de desastre, que demanda atendimento imediato, eficaz e de qualidade, a fim de minimizar o risco às vítimas.

**Palavras-chave:** Desastres Naturais. Vulnerabilidade a Desastres. Enfermagem. Promoção da Saúde.

---

## **VULNERABILIDAD ANTE DESASTRES NATURALES: IMPLICACIONES PARA LA ENFERMERÍA**

### **RESUMEN**

La creciente ocurrencia de desastres naturales en la contemporaneidad y el aumento de su intensidad y gravedad plantean el reto, para gestores, profesionales y población, de estar preparados para hacer frente a ellos, teniendo en cuenta las medidas que se deben tomar con respecto a la vulnerabilidad. Organizaciones internacionales señalan la necesidad de una mayor conciencia de la importancia de reducir los desastres, a fin de tornar las comunidades resistentes al riesgo natural. Este artículo tiene como objetivo presentar una reflexión acerca de las implicaciones para la enfermería, basada en los tipos de vulnerabilidad. La situación de desastre moviliza diversos actores, representantes de la sociedad civil organizada, los servicios de salud, que desempeñan un papel importante en la prevención, preparación, respuesta y reconstrucción. Esas situaciones han repercutido a nivel internacional, debido a la difusión de informaciones sobre la vulnerabilidad de las víctimas. Para el enfrentamiento de estos problemas, presentamos las implicaciones para la enfermería en estos escenarios, ya que estos profesionales constituyen los recursos humanos en el campo de la salud en cualquier nivel de atención. Su actuación debe ser observada tanto en la preparación y la respuesta ante una situación de desastre, lo que exige una atención inmediata, eficaz y de buena calidad, a fin de minimizar los riesgos a las víctimas.

**Palabras clave:** Desastres Naturales. Vulnerabilidad ante Desastres. Enfermería. Promoción de la Salud.

---

## **REFERENCES**

1. Ministério da Saúde (BR). Guia de preparação e resposta aos desastres associados às inundações para a gestão municipal do Sistema Único de Saúde. Brasília (DF): Ministério da Saúde; 2011.
2. Sobral A, Freitas CM, Andrade EV, Lyra GFD, Mascarenhas MS, Alencar MRF, et al. Desastres naturais: sistemas de informação e vigilância: uma revisão da literatura. *Epidemiol Serv Saúde*. 2010; 19(4):389-402.
3. Organização Panamericana de Saúde. Preparativos de salud para situaciones de desastres. Washington (DC): OPS; 2003.
4. Rodrigues T. Notas, notícias e recessão: a estratégia internacional de redução de desastres. *Territorium*. 2010; (17):223-7.
5. Valêncio N. Desastres, ordem social e planejamento em defesa civil: o contexto brasileiro. *Saúde Soc*. 2010; 19(4):748-62.
6. Centro Universitário de Estudos e Pesquisas sobre Desastres. Comunicação de riscos e de desastres. Florianópolis (SC): Ceped; 2010.
7. Cardona OD. The need for rethinking the concepts of vulnerability and risk from a holistic perspective: a necessary review and criticism for effective risk management. In: Bankoff G, Frerks G, Hilhorst D, editores. *Mapping vulnerability: disasters, development, and people*. London: Earthscan; 2004. p. 37-51.

8. Organização Mundial da Saúde. Índice de seguridad hospitalaria: guía del evaluador de hospitales seguros. Washington (DC): OMS; 2011.
9. McHugh MD. Hospital nurse staffing and public health emergency preparedness: implications for policy. *Public health nurs.* 2010; 7(5):442-9.
10. Silva MA, Carvalho R. Situação de desastre: atuação da equipe de enfermagem em cirurgias emergenciais. *Rev SOBECC.* 2013; 18(2):67-76.
11. Bellucci JA, Matsuda LM. O enfermeiro no gerenciamento à qualidade em serviço hospitalar de emergência: revisão integrativa da literatura. *Rev gaúch enferm.* 2011; 32(4):797-806.
12. Gebbie K, Qureshi K. Emergency and disaster preparedness: core competencies for nurses. *Am j nurs.* 2002; 1(102):46-51.
13. World Health Organization. ICN framework of disaster nursing competencies. Geneva: WHO; 2009.
14. Jane JA, Robinson FRCN. Nursing and disaster preparedness. *Int nurs rev.* 2010; 57(2):148.
15. Sánchez AIM, Bertolozzi MR. Pode o conceito de vulnerabilidade apoiar a construção do conhecimento em Saúde Coletiva? *Ciênc saúde colet.* 2007; 2(12):319-24.
16. Girondi JBR, Backes MTS, Argenta MI, Meirelles BHS, Santos SMA. Risco, vulnerabilidade e incapacidade: reflexões com um grupo de enfermeiras. *Rev Eletrônica Enferm.* [on-line]. 2010;12(1):20-7.
17. Brasil. Política Nacional de Atenção às Urgências. Brasília (DF): Ministério da Saúde; 2006.
18. São Paulo (Estado). Desastres e incidentes com múltiplas vítimas: plano de atendimento – preparação hospitalar. São Paulo: Secretaria Estadual de Saúde; 2012.
19. Silva AP, Munari DB, Brasil VV, Chaves LDP, Bezerra ALQ, Ribeiro LCM. Trabalho em equipe de enfermagem em unidade de urgência e emergência na perspectiva de Kurt Lewin. *Ciênc cuid saúde.* 2012; 11(3):549-56.
20. Martins JT, Bobroff MCC, Ribeiro RP, Robazzi MLCC, Marziale MHP, Haddad MCFL. Significados de cargas de trabalho para enfermeiros de pronto-socorro/emergência. *Ciênc cuid saúde.* 2013; 12(1):40-46.

---

**Corresponding author:** Andrea Gonçalves Bandeira. Rua São Manoel, 963. Bairro: Rio Branco, Porto Alegre RS, CEP: 90620-110. E-mail: deiabandeira@hotmail.com.

**Submitted:** 09/10/2013

**Accepted:** 14/05/2014